

Department of Transportation's National Infrastructure Investments under the Consolidated
Appropriations Act, 2015

TIGER VII Discretionary Grant Program

Project Name: **Highway 67 Interchange North of Cabot**

Project Location: **Cabot, Lonoke County, Arkansas**
United States Congressional District 1

Location Type: **Urban**

Total Funds Requested: **\$16,500,000**

Total Local Funds: **\$9,500,000**

Total Project Cost: **\$26,000,000**



Project Contact:

Kevin Thornton, P.E.
Assistant Chief Engineer - Planning
Arkansas State Highway and Transportation Department
P.O. Box 2261
Little Rock, AR 72203
Phone: 501-569-2241
Email: Kevin.Thornton@ahtd.ar.gov

June 2015

Department of Transportation’s National Infrastructure Investments under the Consolidated
Appropriations Act, 2015

TIGER VII Discretionary Grant Program

Highway 67 Interchange North of Cabot

Table of Contents

Project 2

 Project Description..... 2

 Overview 3

 Interstate 30/ Highway 67 Corridor 4

 Communities Served 5

 Adverse Effects of Growth 7

 Solutions 8

Project Parties 9

Grant Funds and Sources/ Uses of Project Funds..... 9

Selection Criteria..... 9

 Primary Selection Criteria..... 9

 Economic Competitiveness..... 9

 Quality of Life 9

 Safety 9

 Secondary Selection Criteria..... 9

 Partnership 9

Results of Benefit – Cost Analysis..... 10

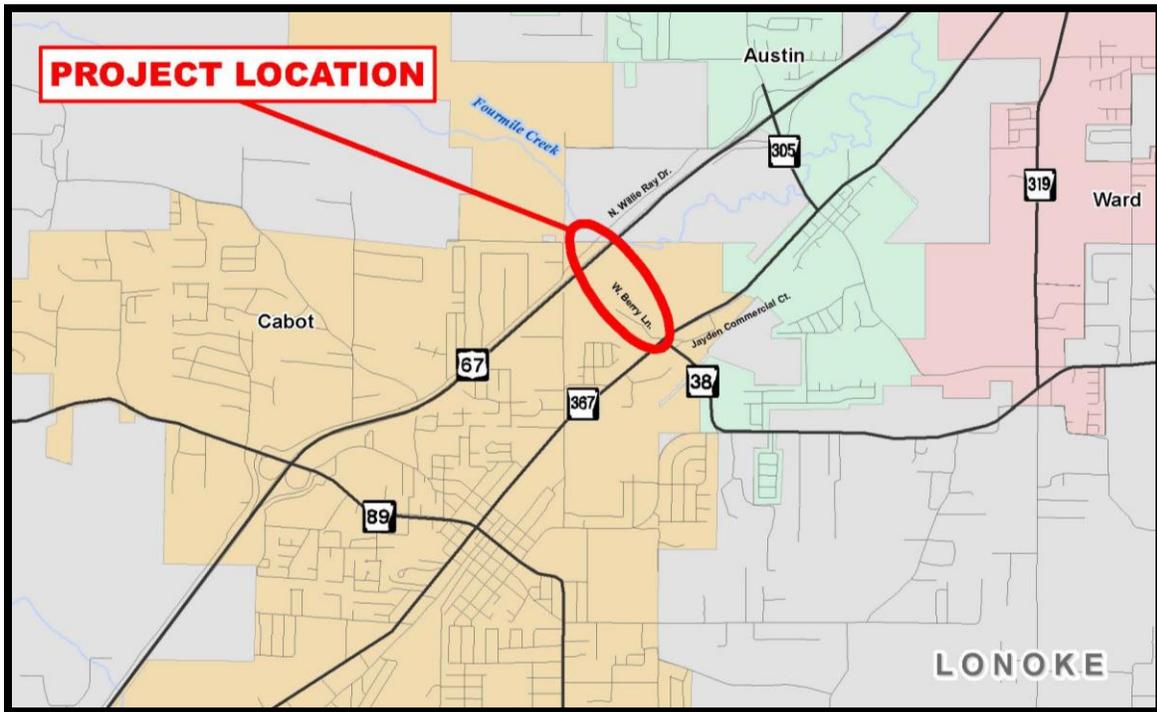
Project Readiness 19

Federal Wage Rate Certification Attachment

Project

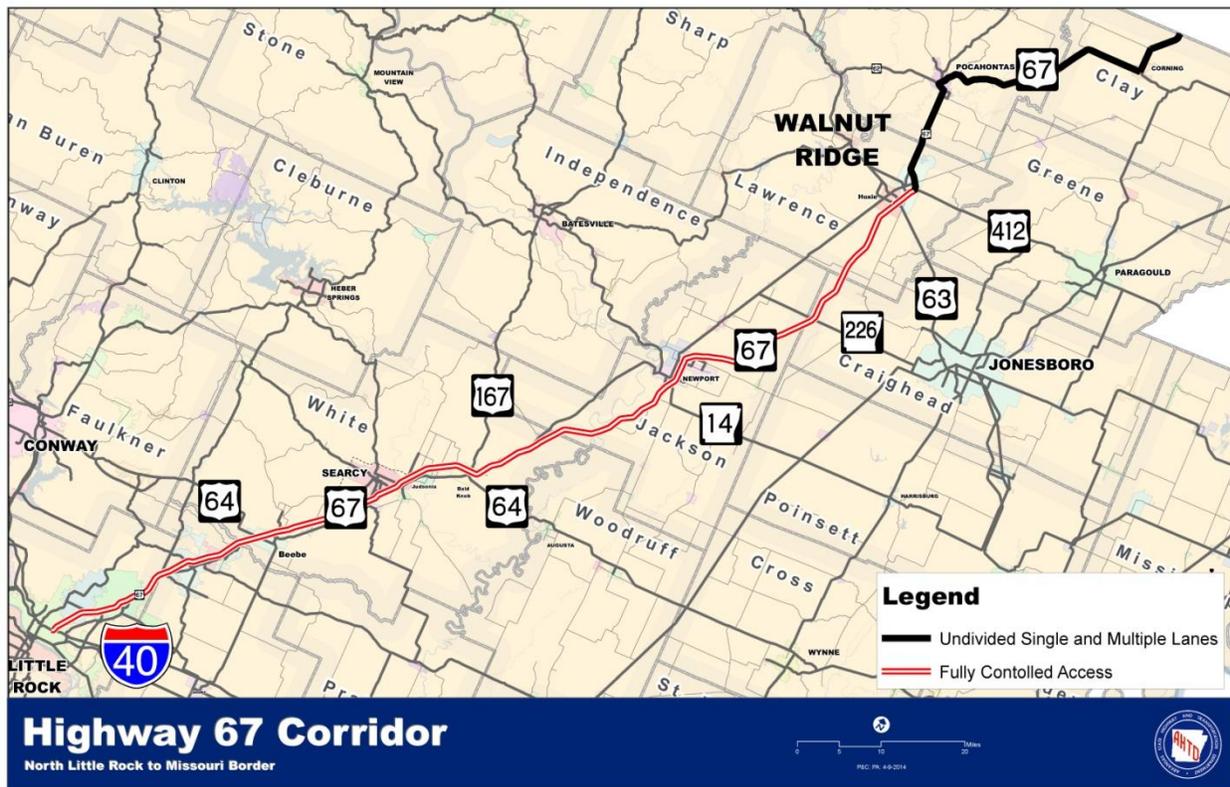
Project Description

The Arkansas State Highway and Transportation Department (AHTD) is requesting funding to construct a new Interchange on Highway 67 north of Cabot, located in Lonoke County, Arkansas. This urban area project will include construction of a new road connecting the interchange to the intersection of Highways 367 and 38. The total cost of the project will be \$26 million dollars. This application requests \$16.5 million. The City of Cabot has committed to pay \$9.5 million, and voters in the area have passed a five-year city tax to pay their share of the project.



Overview

Highway 67 is a vital transportation corridor through the state of Arkansas. Highway 67 parallels Interstate 30 from Texarkana to Central Arkansas. From Interstate 40 to the northeast, Highway 67 is an extension of Interstate 30, having been constructed as a freeway for approximately 120 miles to U.S. Highways 63 and 412 in Walnut Ridge (surfacing of the last 22 miles is under construction). From there, Highway 67 continues along its historical alignment through Pocahontas and Corning to the Missouri State Line, then to St. Louis and beyond. Access to Highway 67 is important for every community along the route.



This new access to Highway 67 will have a significant impact on residents of the area, with regard to safety, economics and quality of life. It will encourage residents to use the newly constructed Union Pacific Railroad overpass on Highway 38 to access Cabot schools, thereby increasing safety. It will also have a positive impact for travelers on Highway 67 by decreasing off-ramp back-ups at Cabot's two existing interchanges during peak hours.

Highway 67 Corridor

As mentioned above, Highway 67 is an important corridor through Arkansas. From Interstate 40 in North Little Rock to Bald Knob, a distance of 55 miles, Highway 67 is dually signed as Highway 167. From Beebe to Bald Knob, it is also signed as Highway 64. North of Newport, Highway 67 intersects with Highway 226 which is under construction as a four-lane connection to Jonesboro via Highway 49 to future Interstate 555.

In Central Arkansas, population growth and commuter traffic between Cabot and Little Rock has resulted in major traffic congestion along Highway 67. \$128 million has already been spent to complete reconstruction and widening to six lanes for the 19 miles from Interstate 40 to south Jacksonville. A \$42 million project is currently under construction in south Jacksonville to reconstruct 1.3 miles and replace four bridges on Highway 67. Arkansas' Connecting Arkansas Program (CAP) and the Statewide Transportation Improvement Program (STIP) include \$171 million to continue widening Highway 67 through Jacksonville to Cabot in the next five years.

Regional Projects Supporting Improvements to Highway 67 Interchange (Cabot)

| Route | Description | Length (Miles) | Completed | Under Construction | Scheduled | Proposed TIGER Project |
|----------|-------------------------------------------------------------------|----------------|-----------|--------------------|-----------|------------------------|
| | | | | | | |
| 67 | I-40 to South Jacksonville, widening and interchange improvements | 19.0 | 128.0 | | | |
| 67 | Reconstruction and bridge replacement in South Jacksonville | 1.3 | | 42.0 | | |
| 67 | Jacksonville to Cabot, widening and interchange improvements | 7.0 | | | 171.0 | |
| 367 & 38 | Hwy. 367/38, Signal and intersection improvements (Cabot) | 0.4 | 0.7 | | | |
| 89 | Hwy. 89 Relocation (Cabot) | 0.2 | 0.7 | | | |
| 67 | U.P. Railroad Overpass (Cabot) | 0.7 | 6.4 | | | |
| 67 & 38 | Hwy. 67 Interchange North of Cabot with Connector | 0.9 | | | | 26.0 |
| Totals | | 29.5 | 135.8 | 42.0 | 171.0 | 26.0 |

Communities Served

The City of Cabot, founded in 1873, is located 20 miles northeast of Arkansas' capital city of Little Rock. Due to its locale, outstanding school district and great business opportunities, Cabot has become one of the fastest growing cities in Arkansas.

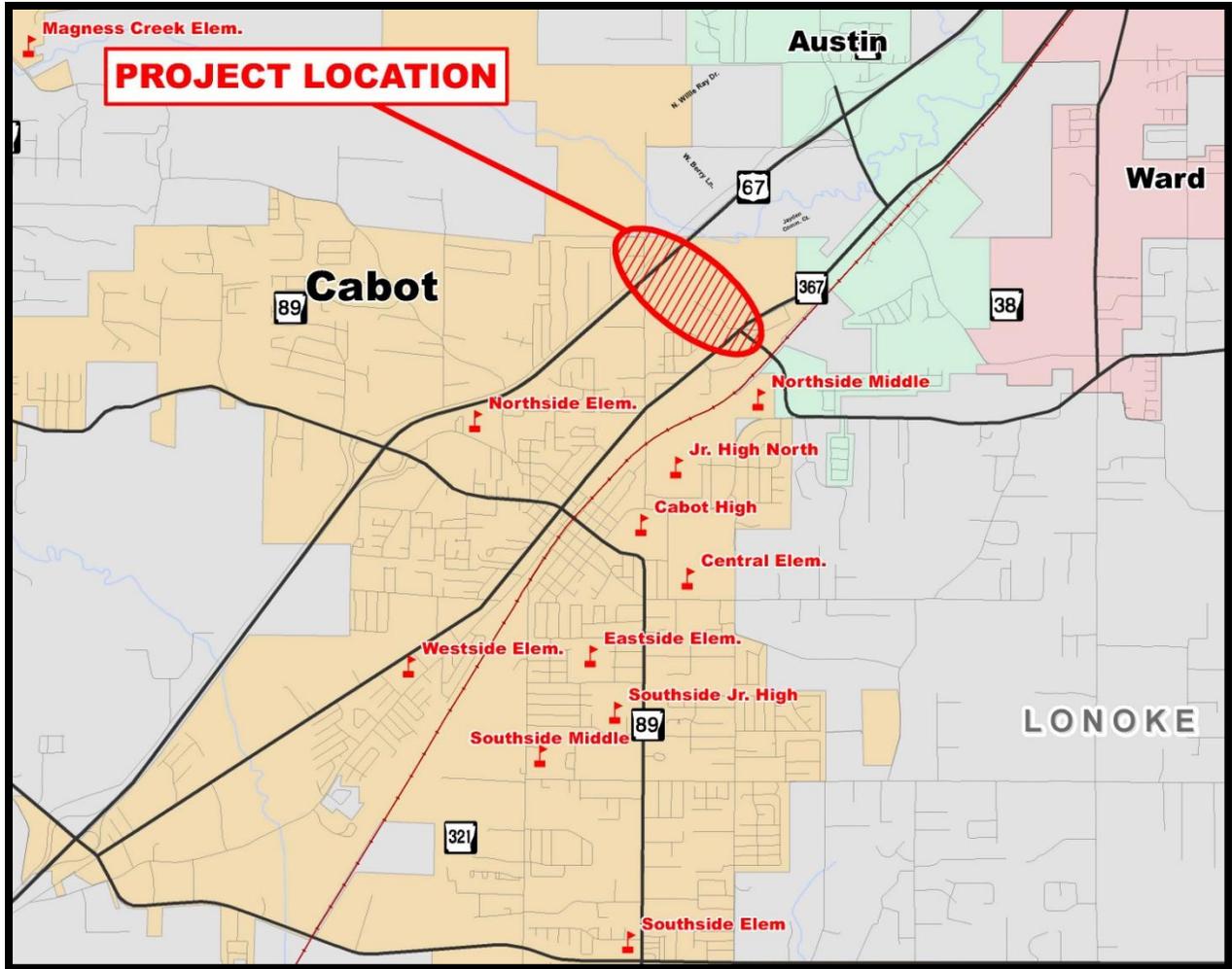
According to 2010 U.S. Census Bureau estimates, the population of the city is 23,776, ranking it as the state's 20th largest city, and the largest in Lonoke County, (population 68,356). Since 2000, the city has had a population growth of 138 percent. The population of Cabot is expected to double by 2050. It is part of the Little Rock–North Little Rock–Conway Metropolitan Statistical Area. The city has a total area of 19.2 square miles.

| Census | Pop. | %± |
|------------------|-------------|-----------|
| 1960 | 1,321 | 15.2% |
| 1970 | 2,903 | 119.8% |
| 1980 | 4,806 | 65.6% |
| 1990 | 8,319 | 73.1% |
| 2000 | 15,261 | 83.4% |
| 2010 | 23,776 | 47.0% |
| Est. 2014 | 36,366 | 53.0% |

The phenomenal population growth experienced from the 1970s to today is evidenced in new housing starts, as seen by new subdivided developments, that now cover the town. Some reasons for growth include: the Little Rock Air Force Base in nearby Jacksonville, the top-rated Cabot School District, and overall growth in the Little Rock Metropolitan area. Cabot residents work in Little Rock, North Little Rock, and Jacksonville, but they have chosen Cabot as their home because of the quality of life.

Cabot has a local school district with a local school board and neighborhood schools. The District encompasses much of northwest Lonoke County, including the cities of Cabot, Austin, and Ward. The community focus on education is the primary reason why Cabot is one of the fastest-growing cities in Arkansas.

The Cabot School District has nine elementary schools, two middle schools, two junior high schools, and one high school. The district consists of 10,644 students, making it the 7th largest district in state and largest employer in the county. There are approximately 13.9 students per teacher in Cabot.



Cabot High School is the sixth largest in the state of Arkansas, and competes in the largest athletic classification. The school regularly produces National Merit Scholarship students, and earns statewide recognition for extracurricular activities such as Forensics and Debate, Band, and Quiz Bowl.

The city is within a 50-mile radius of four major universities, as well as a number of smaller colleges, community colleges, and technical schools. Specialty programs are also available at the University of Arkansas for Medical Sciences in Little Rock, and the University of Arkansas at Little Rock School of Law.



This close proximity to higher education means that many students are able to maintain their residence in the area and commute to further their education, while enjoying the cost savings of living at home. However, the cost savings to students and their parents adds more vehicles to the roadways leading in and out of this region. Convenient access to educational opportunities provides the citizens of this region ability to strengthen the middle class.

Adverse Effects of Growth

While the excellent schools might be considered ideal by many, residents have had to adjust to the explosive growth such excellence often produces. Extreme traffic congestion is a daily problem for residents of the area in and around Cabot.

Reduction in air quality due to the excess of automobiles each morning and afternoon negates part of the allure of the suburbs. Fresh country air is replaced with exhaust fumes. Stress caused by sitting in bumper-to-bumper, stop and go traffic replaces the tranquility of small town life.

The large and growing number of students and schools cause congestion in the area nine months out of the year. Population growth to the northwest and an absence of schools beyond elementary on that side of the highway, force parents and school bus drivers to drive through downtown Cabot to the south, or Austin to the north. Combined with business travelers, the result is a dangerous, stressful, and inefficient commute.

Healthcare access from Cabot is also adversely affected by traffic congestion in the area. The nearest full-service hospitals in the area are located 19 miles away in Searcy, or just over 20 miles away in North Little Rock. The National Institute of Health has published that the time it takes to reach an emergency facility has a direct correlation to survival rates of many major conditions and illnesses. In Cabot, distance and traffic congestion combine to make even a mild heart attack, potentially fatal.



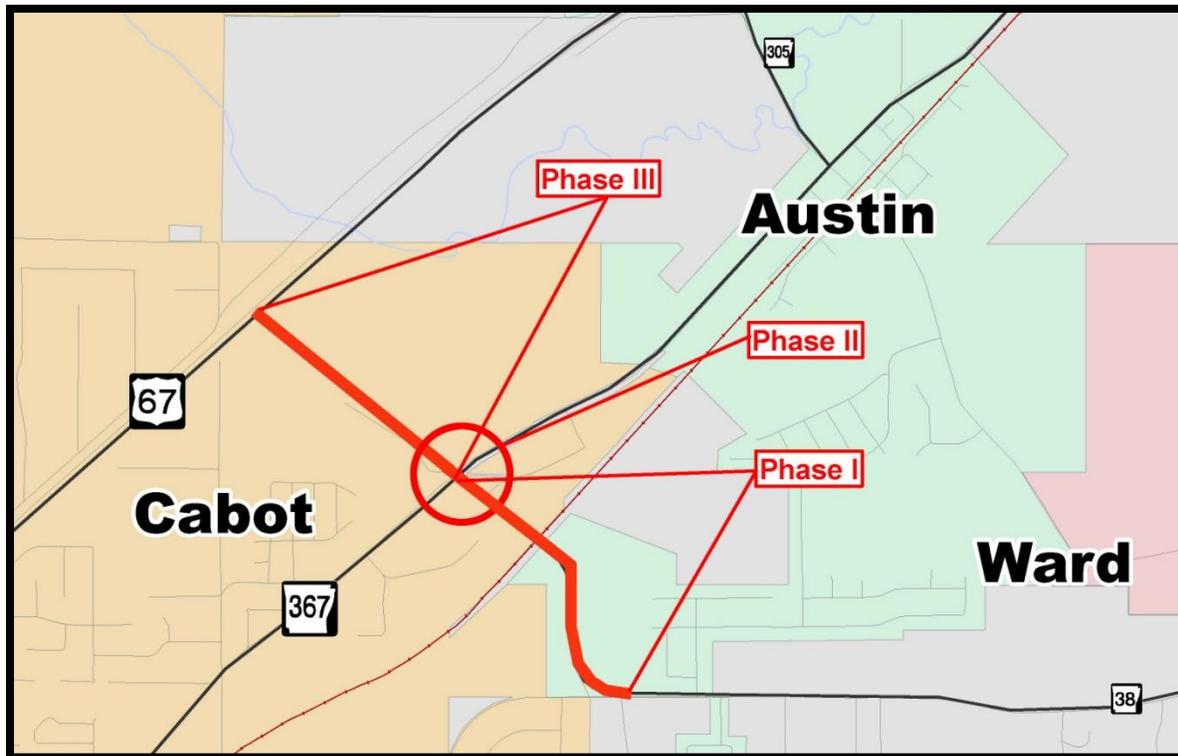
Solutions

The first two phases of traffic solutions are complete and consists of:

Phase I: New overpass of the Union Pacific main rail line and relocation of Highway 38 was completed in 2010. The project cost was \$6.4 million.

Phase II: Signalization of the Highway 367/ Highway 38 intersection and addition of turn lane was let to contract in February 2014 for \$663,373, and was completed in October 2014.

Phase III: Consists of the new interchange on Highway 67, and a new road connecting to Highways 367 and 38 and the new railroad overpass. Preliminary engineering is underway for this phase.



Project Parties

In one of the strongest partnerships to date, the City of Cabot has offered \$9.5 million to assist the AHTD with construction of a new Highway 67 Interchange and connecting road. The City of Cabot also plans to build a road on the north side of the new interchange to connect with Highway 5, another high traffic route.

Grant Funds and Sources/ Uses of Project Funds

The City of Cabot has shown their commitment to relieve traffic problems for their residents by partnering with AHTD to construct a new interchange on Highway 67 and build a new road to connect to Highways 367 and 38 and a new railroad overpass. Cabot has committed to pay \$9.5 million, and voters in the area have passed a five-year city tax to pay their share of the project. Unfortunately, State and Federal funding is not available in the 2013-2016 Statewide Transportation Improvement Program (STIP). Therefore, AHTD is requesting \$16.5 million in TIGER funds to allow the project to proceed. City and/or State Highway funds are available for the matching share.

Selection Criteria

Primary Selection Criteria

Economic Competitiveness

Increase economic competitiveness for the area, by bringing more jobs to an area already set apart by an excellent school district and close proximity to Little Rock.

Quality of Life

Quality of Life will be increased for residents by reducing congestion and improving transportation alternatives. Air quality will also be increased in the area by reducing the number of automobiles on overcrowded thoroughfares.

Safety

The area will become safer by allowing easier access to Highway 67 via a new road that will connect to Highways 367 and 38 and a recently constructed railroad overpass. Drivers will be able to cross over the railroad and continue on to Highway 67. The route also enables drivers to reach their destinations with fewer turns and less time spent in heavily populated areas, many with large pedestrian populations.

Secondary Selection Criteria

Partnership

The Partnership with the City of Cabot is among the strongest the AHTD has ever entered into with any municipality or community organization.

Results of Benefit-Cost Analysis

The Benefit Cost Analysis (BCA) (<http://www.arkansashighways.com/TIGER/T7/t7.aspx>) was performed in accordance with the ARRA guidance provided in the Federal Register. These benefits and costs were quantified in accordance with Notice of Funding Availability, 80 Fed. Reg. 18,283-18,292 (2015).

The purpose of the BCA is to systematically compare the benefits and costs of constructing a proposed new interchange to the north of Cabot in Lonoke County, Arkansas. The BCA compared the cost of constructing the new interchange to the cost of doing nothing other than routine maintenance. The analysis considers the construction phase followed by a 20-year project life beyond the proposed opening date (2015 through 2038) for purposes of the BCA.

The analysis considered typical roadway construction and maintenance costs in Arkansas. Table 1 summarizes the findings of the BCA analysis using both a three percent discount rate and a seven percent discount rate. Road user benefits that were considered include the value of travel time savings provided by the improved facility, vehicle operating cost benefits, and the value to society of enhancing the safety within the improved highway network.

Table 1: Benefit Cost Analysis Results

| Year | Construction Costs | | | Travel Time Benefit | | | Vehicle Operation Cost Benefit | | | Safety Benefit | | |
|-------|--------------------|--------------|--------------|---------------------|--------------|--------------|--------------------------------|--------------|--------------|----------------|--------------|--------------|
| | Non-Disc. | Disc (3%) | Disc. (7%) | Non-Disc. | Disc (3%) | Disc. (7%) | Non-Disc. | Disc (3%) | Disc. (7%) | Non-Disc. | Disc (3%) | Disc. (7%) |
| 2015 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| 2016 | \$9,230,000 | \$8,961,165 | \$8,626,168 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| 2017 | \$11,180,000 | \$10,538,222 | \$9,765,045 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| 2018 | \$5,590,000 | \$5,115,642 | \$4,563,105 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| 2019 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| 2020 | \$0 | \$0 | \$0 | \$4,510,782 | \$3,891,040 | \$3,216,125 | \$5,927,787 | \$5,113,361 | \$4,226,430 | \$5,633,530 | \$4,859,533 | \$4,016,629 |
| 2021 | \$0 | \$0 | \$0 | \$4,066,955 | \$3,406,011 | \$2,709,984 | \$5,454,679 | \$4,568,208 | \$3,634,683 | \$5,183,908 | \$4,341,441 | \$3,454,257 |
| 2022 | \$0 | \$0 | \$0 | \$3,623,128 | \$2,945,935 | \$2,256,302 | \$4,981,572 | \$4,050,474 | \$3,102,273 | \$4,734,286 | \$3,849,407 | \$2,948,275 |
| 2023 | \$0 | \$0 | \$0 | \$3,179,301 | \$2,509,769 | \$1,850,382 | \$4,508,465 | \$3,559,024 | \$2,623,967 | \$4,284,663 | \$3,382,353 | \$2,493,713 |
| 2024 | \$0 | \$0 | \$0 | \$2,735,474 | \$2,096,513 | \$1,487,916 | \$4,035,357 | \$3,092,765 | \$2,194,967 | \$3,835,041 | \$2,939,240 | \$2,086,008 |
| 2025 | \$0 | \$0 | \$0 | \$2,291,647 | \$1,705,200 | \$1,164,957 | \$3,562,250 | \$2,650,648 | \$1,810,867 | \$3,385,419 | \$2,519,070 | \$1,720,975 |
| 2026 | \$0 | \$0 | \$0 | \$1,847,819 | \$1,334,904 | \$877,886 | \$3,089,142 | \$2,231,662 | \$1,467,629 | \$2,935,797 | \$2,120,882 | \$1,394,776 |
| 2027 | \$0 | \$0 | \$0 | \$1,403,992 | \$984,732 | \$623,389 | \$2,616,035 | \$1,834,834 | \$1,161,551 | \$2,486,175 | \$1,743,753 | \$1,103,891 |
| 2028 | \$0 | \$0 | \$0 | \$960,165 | \$653,826 | \$398,434 | \$2,142,928 | \$1,459,229 | \$889,239 | \$2,036,552 | \$1,386,793 | \$845,097 |
| 2029 | \$0 | \$0 | \$0 | \$516,338 | \$341,360 | \$200,245 | \$1,669,820 | \$1,103,948 | \$647,585 | \$1,586,930 | \$1,049,148 | \$615,439 |
| 2030 | \$0 | \$0 | \$0 | \$72,511 | \$46,542 | \$26,281 | \$1,196,713 | \$768,124 | \$433,744 | \$1,137,308 | \$729,995 | \$412,213 |
| 2031 | \$0 | \$0 | \$0 | -\$371,316 | -\$231,392 | -\$125,778 | \$723,606 | \$450,927 | \$245,110 | \$687,686 | \$428,543 | \$232,943 |
| 2032 | \$0 | \$0 | \$0 | -\$815,143 | -\$493,175 | -\$258,054 | \$250,498 | \$151,555 | \$79,301 | \$238,063 | \$144,032 | \$75,365 |
| 2033 | \$0 | \$0 | \$0 | -\$1,258,971 | -\$739,512 | -\$372,484 | -\$222,609 | -\$130,759 | -\$65,862 | -\$211,559 | -\$124,269 | -\$62,593 |
| 2034 | \$0 | \$0 | \$0 | -\$1,702,798 | -\$971,082 | -\$470,838 | -\$695,717 | -\$396,757 | -\$192,371 | -\$661,181 | -\$377,062 | -\$182,822 |
| 2035 | \$0 | \$0 | \$0 | -\$2,146,625 | -\$1,188,534 | -\$554,729 | -\$1,168,824 | -\$647,150 | -\$302,046 | -\$1,110,803 | -\$615,025 | -\$287,053 |
| 2036 | \$0 | \$0 | \$0 | -\$2,590,452 | -\$1,392,496 | -\$625,628 | -\$1,641,931 | -\$882,619 | -\$396,548 | -\$1,560,426 | -\$838,806 | -\$376,863 |
| 2037 | \$0 | \$0 | \$0 | -\$3,034,279 | -\$1,583,567 | -\$684,877 | -\$2,115,039 | -\$1,103,823 | -\$477,392 | -\$2,010,048 | -\$1,049,029 | -\$453,694 |
| 2038 | \$0 | \$0 | \$0 | -\$3,478,106 | -\$1,762,328 | -\$733,696 | -\$2,588,146 | -\$1,311,392 | -\$545,961 | -\$2,459,670 | -\$1,246,295 | -\$518,860 |
| 2039 | \$0 | \$0 | \$0 | -\$3,921,933 | -\$1,929,331 | -\$773,196 | -\$3,061,254 | -\$1,505,934 | -\$603,516 | -\$2,909,292 | -\$1,431,179 | -\$573,557 |
| TOTAL | \$26,000,000 | \$24,615,029 | \$22,954,318 | \$5,888,489 | \$9,624,415 | \$10,212,624 | \$28,665,332 | \$25,056,327 | \$19,933,650 | \$27,242,379 | \$23,812,525 | \$18,944,139 |
| | | | | | | | No Disc. | 3% Disc. | 7% Disc. | | | |
| | | | | | | | Costs | \$26,000,000 | \$24,615,029 | \$22,954,318 | | |
| | | | | | | | Benefits | \$61,796,200 | \$58,493,267 | \$49,090,414 | | |
| | | | | | | | B/C Ratio | 2.38 | 2.38 | 2.14 | | |

The economic benefits of providing additional access for communities along a major highway corridor, as well as providing a safe and efficient transportation network for the region can be estimated by studying the impact of construction activities and travel time savings. Providing an improved transportation network to the region makes an impact in terms of improving the per capita income in areas of the country that are below the national average which is a goal of the TIGER Discretionary Grant program.

The BCA was calculated using the following key factors for evaluation:

- Construction Costs
- Forecasted Traffic
- Travel Speeds and Congestion
- Historic Crash Data
- Vehicle Miles Traveled (VMT)
- Vehicle Hours Traveled (VHT)
- Traffic Distribution by Vehicle Type
- Value of Time

The construction cost estimate for the proposed interchange and connector is \$15 million. Construction costs were spread across 2016, 2017, and 2018. The analysis also includes right of way and utility costs, and construction engineering costs. These costs reflect basic construction costs that would be incurred if the project were built using traditional construction methods and schedules. Assumed costs by year are shown in Attachment 3.

The BCA value of time analysis quantifies the road user impacts that the new interchange would have in terms of travel time savings by first determining the amount of travel time saved and then assigning a dollar value for this time. The Central Arkansas Regional Transportation Study (CARTS) travel demand model was used to estimate the change in VHT on the roadway network in Lonoke County, as shown in Attachment 2. Linear interpolation was used to estimate VHT in years other than the available model years in years between the 2010 and 2030 model runs. Because model data was not available beyond 2030, and because VHT values were very similar under the build and no-build models in 2030, VHT values were assumed to be equal beyond 2030. Time values were calculated in Attachment 1 and assigned to the travel time saving, as shown in Attachment 4. It was assumed that the new interchange would primarily divert automobiles.

The impacts of the vehicle operating costs account for the actual cost to operate the vehicle, aside from the travel time costs. Again, it was assumed that the primary beneficiaries would be passenger vehicles. Operating costs per mile are calculated in Attachment 1. The CARTS model was again used to estimate the change in total VMT in 2010 and 2030. A similar process to that used for VHT was used to estimate VMT in other years. The model results are provided in Attachment 2, and per mile costs are applied to these VMT values in Attachment 5.

The value of safety improvements considers cost savings that can be attributed to the reduction in travel distance by vehicles in Lonoke County. The statistical cost of a fatal and non-fatal crash was determined using TIGER guidance, and Arkansas urban fatal and non-fatal statewide average crash rates in 2012 were calculated. Using this information, a crash cost per VMT was

estimated, as shown in Attachment 1. This cost was applied to the total VMT estimates in Lonoke County, as shown in Attachment 6.

When examined in the context of the Lonoke County roadway network, the proposed interchange exhibits a net positive economic impact of 2.38.

ATTACHMENT 1

| Benefits per VHT and VMT | | | | | |
|----------------------------|-----------------------------------|----------------|------------------------------|----------------|-------------|
| Value of Time | | | | | |
| Automobiles | | | Trucks | | |
| Value of Time ¹ | \$15.05 | per hour | Value of Time ¹ | \$25.80 | per hour |
| Occupancy | 1.1 | | Occupancy | 1.05 | |
| | | | Inventory Costs ² | \$1.03 | |
| TOTAL COST | \$16.56 | per VHT | TOTAL COST | \$28.12 | per VHT |
| Vehicle Operating Costs | | | | | |
| Automobiles | | | Trucks | | |
| Fuel Economy | 25 | MPG | Fuel Economy | 6 | MPG |
| Fuel Price | \$3.00 | per gallon | Fuel Price | \$3.00 | per gallon |
| Other Maint. ³ | \$0.061 | per mile | Other Maint. ⁶ | \$0.150 | per mile |
| Vehicle Life | 10 | years | Vehicle Life | 5 | years |
| Vehicle Cost | \$20,000 | | Vehicle Cost ⁶ | \$150,000 | |
| Salvage Value | \$2,000 | | Salvage Value | \$15,000 | |
| Miles per Year | 15,000 | miles | Miles per Year ⁶ | 125,000 | miles |
| Finance Rate | 3.0% | | Finance Rate | 3.0% | |
| Owner. Cost ⁴ | \$2,170 | per year | Owner. Cost ⁶ | \$29,928 | per year |
| Insurance ⁵ | \$1,092 | per year | Insurance ⁶ | \$6,500 | per year |
| Fuel Cost | \$0.120 | per VMT | Fuel Cost | \$0.500 | per VMT |
| Other Maint. | \$0.061 | per VMT | Other Maint. | \$0.150 | per VMT |
| Ownership | \$0.145 | per VMT | Ownership | \$0.239 | per VMT |
| Insurance | \$0.073 | per VMT | Insurance | \$0.052 | per VMT |
| TOTAL COST | \$0.398 | per VMT | TOTAL COST | \$0.941 | per VMT |
| Safety Costs | | | | | |
| All Vehicles | | | Cost of Crash ¹ | | |
| | Crash Rate (per MVM) ⁷ | | Crash Cost ¹ | AIS 0 | \$0 |
| | Build | No-Build | | AIS 1 | \$28,200 |
| Fatal Crashes | 0.00965 | 0.00965 | \$9,400,000 | AIS 2 | \$441,800 |
| Non-Fatal Crash | 2.224 | 2.224 | \$129,490 | AIS 3 | \$987,000 |
| | Crash Cost (per VMT) | | | AIS 4 | \$2,500,400 |
| Fatal Crashes | \$0.091 | \$0.091 | | AIS 5 | \$5,574,200 |
| Non-Fatal Crash | \$0.288 | \$0.288 | | AIS 6 | \$9,400,000 |
| TOTAL COST | \$0.379 | \$0.379 | | | |

1 - Tiger Benefit Cost Analysis (BCA) Resource Guide, 2015, pages 2-3
 2 - AASHTO, Equation 5-12, 3% interest rate, \$300,000 Value of Cargo
 3 - AASHTO Table 5-4, Avg. of Maint. and Tires for 5 vehicle types, adjust for inflation
 4 - AASHTO, Equation 5-6
 5 - AASHTO, Table 5-4, Avg. of Insurance for 5 Vehicle Types, adjusted for inflation
 6 - From <http://www.thetruckersreport.com/infographics/cost-of-trucking/>
 7 - Based on 2012 statewide average crash rates in urban areas

ATTACHMENT 2

| Estimates of VMT and VHT | | | | | | |
|--------------------------|--------------------------------------------------------------|-----------|-----------|--------------------|----------|-----------|
| | Output from CARTS Travel Demand Model (Lonoke County) | | | | | |
| | Daily VMT | | | Daily VHT | | |
| | Build | No-Build | Reduction | Build | No-Build | Reduction |
| 2010 | 2,060,609 | 2,133,894 | 73,285 | 46,672 | 48,153 | 1,481 |
| 2030 | 2,977,113 | 2,985,341 | 8,228 | 73,828 | 73,840 | 12 |
| | Estimates of VMT and VHT by years using linear interpolation | | | | | |
| | Daily VMT | | | Daily VHT | | |
| | Build ¹ | No-Build | Reduction | Build ¹ | No-Build | Reduction |
| 2015 | 2,346,756 | 2,346,756 | 0 | 54,575 | 54,575 | 0 |
| 2016 | 2,389,328 | 2,389,328 | 0 | 55,859 | 55,859 | 0 |
| 2017 | 2,431,900 | 2,431,900 | 0 | 57,143 | 57,143 | 0 |
| 2018 | 2,474,473 | 2,474,473 | 0 | 58,428 | 58,428 | 0 |
| 2019 | 2,517,045 | 2,517,045 | 0 | 59,712 | 59,712 | 0 |
| 2020 | 2,518,861 | 2,559,618 | 40,757 | 60,250 | 60,997 | 747 |
| 2021 | 2,564,686 | 2,602,190 | 37,504 | 61,608 | 62,281 | 673 |
| 2022 | 2,610,511 | 2,644,762 | 34,251 | 62,966 | 63,565 | 600 |
| 2023 | 2,656,337 | 2,687,335 | 30,998 | 64,323 | 64,850 | 526 |
| 2024 | 2,702,162 | 2,729,907 | 27,745 | 65,681 | 66,134 | 453 |
| 2025 | 2,747,987 | 2,772,479 | 24,492 | 67,039 | 67,418 | 379 |
| 2026 | 2,793,812 | 2,815,052 | 21,239 | 68,397 | 68,703 | 306 |
| 2027 | 2,839,637 | 2,857,624 | 17,987 | 69,755 | 69,987 | 232 |
| 2028 | 2,885,463 | 2,900,196 | 14,734 | 71,112 | 71,271 | 159 |
| 2029 | 2,931,288 | 2,942,769 | 11,481 | 72,470 | 72,556 | 85 |
| 2030 | 2,977,113 | 2,985,341 | 8,228 | 73,828 | 73,840 | 12 |
| 2031 | 3,022,938 | 3,027,913 | 4,975 | 75,186 | 75,124 | -61 |
| 2032 | 3,068,763 | 3,070,486 | 1,722 | 76,544 | 76,409 | -135 |
| 2033 | 3,114,589 | 3,113,058 | -1,531 | 77,901 | 77,693 | -208 |
| 2034 | 3,160,414 | 3,155,630 | -4,783 | 79,259 | 78,977 | -282 |
| 2035 | 3,206,239 | 3,198,203 | -8,036 | 80,617 | 80,262 | -355 |
| 2036 | 3,252,064 | 3,240,775 | -11,289 | 81,975 | 81,546 | -429 |
| 2037 | 3,297,889 | 3,283,347 | -14,542 | 83,333 | 82,830 | -502 |
| 2038 | 3,343,715 | 3,325,920 | -17,795 | 84,690 | 84,115 | -576 |
| 2039 | 3,389,540 | 3,368,492 | -21,048 | 86,048 | 85,399 | -649 |

1. VMT and VHT for build scenario is equal to no-build until project opens.

ATTACHMENT 3

| Construction and Maintenance Costs | | | | | | | |
|------------------------------------|-------------|--------------|------------|----------|-------|------------|----------------------------------|
| Year | Build | | | No-Build | | | ANNUAL COST (Current Dollars) |
| | Activity | Costs | User Delay | Activity | Costs | User Delay | |
| 2015 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2016 | ROW, C&E | \$9,230,000 | \$0 | | \$0 | \$0 | \$9,230,000 |
| 2017 | Const & Eng | \$11,180,000 | \$0 | | \$0 | \$0 | \$11,180,000 |
| 2018 | Const & Eng | \$5,590,000 | \$0 | | \$0 | \$0 | \$5,590,000 |
| 2019 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2020 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2021 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2022 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2023 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2024 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2025 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2026 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2027 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2028 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2029 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2030 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2031 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2032 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2033 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2034 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2035 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2036 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2037 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2038 | | \$0 | \$0 | | \$0 | \$0 | \$0 |
| 2039 | | \$0 | \$0 | | \$0 | \$0 | \$0 |

Assumes 25% of construction in 2017, 50% of construction in 2018, and 25% in 2019

Assumes right-of way aquisition = 14% of construction costs

Assumes engineering = 10% of project costs

ATTACHMENT 4

| Travel Time Benefits | | | | | | |
|----------------------|------------------|-------|----------------------|-----------------------|---------------------------------|----------------------------------|
| Year | Reduction of VHT | | Benefit per Auto VHT | Benefit per Truck VHT | DALIY BENEFIT (Current Dollars) | ANNUAL BENEFIT (Current Dollars) |
| | Auto | Truck | | | | |
| 2015 | 0.0 | 0.0 | \$16.555 | \$28.117 | \$0 | \$0 |
| 2016 | 0.0 | 0.0 | \$16.555 | \$28.117 | \$0 | \$0 |
| 2017 | 0.0 | 0.0 | \$16.555 | \$28.117 | \$0 | \$0 |
| 2018 | 0.0 | 0.0 | \$16.555 | \$28.117 | \$0 | \$0 |
| 2019 | 0.0 | 0.0 | \$16.555 | \$28.117 | \$0 | \$0 |
| 2020 | 746.5 | 0.0 | \$16.555 | \$28.117 | \$12,358 | \$4,510,782 |
| 2021 | 673.0 | 0.0 | \$16.555 | \$28.117 | \$11,142 | \$4,066,955 |
| 2022 | 599.6 | 0.0 | \$16.555 | \$28.117 | \$9,926 | \$3,623,128 |
| 2023 | 526.1 | 0.0 | \$16.555 | \$28.117 | \$8,710 | \$3,179,301 |
| 2024 | 452.7 | 0.0 | \$16.555 | \$28.117 | \$7,494 | \$2,735,474 |
| 2025 | 379.3 | 0.0 | \$16.555 | \$28.117 | \$6,278 | \$2,291,647 |
| 2026 | 305.8 | 0.0 | \$16.555 | \$28.117 | \$5,063 | \$1,847,819 |
| 2027 | 232.3 | 0.0 | \$16.555 | \$28.117 | \$3,847 | \$1,403,992 |
| 2028 | 158.9 | 0.0 | \$16.555 | \$28.117 | \$2,631 | \$960,165 |
| 2029 | 85.5 | 0.0 | \$16.555 | \$28.117 | \$1,415 | \$516,338 |
| 2030 | 12.0 | 0.0 | \$16.555 | \$28.117 | \$199 | \$72,511 |
| 2031 | -61.5 | 0.0 | \$16.555 | \$28.117 | -\$1,017 | -\$371,316 |
| 2032 | -134.9 | 0.0 | \$16.555 | \$28.117 | -\$2,233 | -\$815,143 |
| 2033 | -208.4 | 0.0 | \$16.555 | \$28.117 | -\$3,449 | -\$1,258,971 |
| 2034 | -281.8 | 0.0 | \$16.555 | \$28.117 | -\$4,665 | -\$1,702,798 |
| 2035 | -355.3 | 0.0 | \$16.555 | \$28.117 | -\$5,881 | -\$2,146,625 |
| 2036 | -428.7 | 0.0 | \$16.555 | \$28.117 | -\$7,097 | -\$2,590,452 |
| 2037 | -502.2 | 0.0 | \$16.555 | \$28.117 | -\$8,313 | -\$3,034,279 |
| 2038 | -575.6 | 0.0 | \$16.555 | \$28.117 | -\$9,529 | -\$3,478,106 |
| 2039 | -649.0 | 0.0 | \$16.555 | \$28.117 | -\$10,745 | -\$3,921,933 |

Assumes that only a minimal portion of reduced VHT will be from trucks

ATTACHMENT 5

| Vehicle Operating Benefits | | | | | | |
|----------------------------|------------------|-------|----------------------|-----------------------|----------------------|-----------------------|
| Year | Reduction of VMT | | Benefit per Auto VMT | Benefit per Truck VMT | DALIY BENEFIT (2014) | ANNUAL BENEFIT (2014) |
| | Auto | Truck | | | | |
| 2015 | 0 | 0 | \$0.398 | \$0.941 | \$0 | \$0 |
| 2016 | 0 | 0 | \$0.398 | \$0.941 | \$0 | \$0 |
| 2017 | 0 | 0 | \$0.398 | \$0.941 | \$0 | \$0 |
| 2018 | 0 | 0 | \$0.398 | \$0.941 | \$0 | \$0 |
| 2019 | 0 | 0 | \$0.398 | \$0.941 | \$0 | \$0 |
| 2020 | 40757 | 0 | \$0.398 | \$0.941 | \$16,241 | \$5,927,787 |
| 2021 | 37504 | 0 | \$0.398 | \$0.941 | \$14,944 | \$5,454,679 |
| 2022 | 34251 | 0 | \$0.398 | \$0.941 | \$13,648 | \$4,981,572 |
| 2023 | 30998 | 0 | \$0.398 | \$0.941 | \$12,352 | \$4,508,465 |
| 2024 | 27745 | 0 | \$0.398 | \$0.941 | \$11,056 | \$4,035,357 |
| 2025 | 24492 | 0 | \$0.398 | \$0.941 | \$9,760 | \$3,562,250 |
| 2026 | 21239 | 0 | \$0.398 | \$0.941 | \$8,463 | \$3,089,142 |
| 2027 | 17987 | 0 | \$0.398 | \$0.941 | \$7,167 | \$2,616,035 |
| 2028 | 14734 | 0 | \$0.398 | \$0.941 | \$5,871 | \$2,142,928 |
| 2029 | 11481 | 0 | \$0.398 | \$0.941 | \$4,575 | \$1,669,820 |
| 2030 | 8228 | 0 | \$0.398 | \$0.941 | \$3,279 | \$1,196,713 |
| 2031 | 4975 | 0 | \$0.398 | \$0.941 | \$1,982 | \$723,606 |
| 2032 | 1722 | 0 | \$0.398 | \$0.941 | \$686 | \$250,498 |
| 2033 | -1531 | 0 | \$0.398 | \$0.941 | -\$610 | -\$222,609 |
| 2034 | -4783 | 0 | \$0.398 | \$0.941 | -\$1,906 | -\$695,717 |
| 2035 | -8036 | 0 | \$0.398 | \$0.941 | -\$3,202 | -\$1,168,824 |
| 2036 | -11289 | 0 | \$0.398 | \$0.941 | -\$4,498 | -\$1,641,931 |
| 2037 | -14542 | 0 | \$0.398 | \$0.941 | -\$5,795 | -\$2,115,039 |
| 2038 | -17795 | 0 | \$0.398 | \$0.941 | -\$7,091 | -\$2,588,146 |
| 2039 | -21048 | 0 | \$0.398 | \$0.941 | -\$8,387 | -\$3,061,254 |

Assumes that only a minimal portion of reduced VMT will be from trucks

ATTACHMENT 6

| Safety Benefits | | | | | | |
|-----------------|-----------|--------------|---------------------|------------------------|---------------------------------|----------------------------------|
| Year | Build VMT | No-Build VMT | Build Cost per Mile | No-Build Cost per Mile | DALIY BENEFIT (Current Dollars) | ANNUAL BENEFIT (Current Dollars) |
| | All | All | | | | |
| 2015 | 2,346,756 | 2,346,756 | \$0.379 | \$0.379 | \$0 | \$0 |
| 2016 | 2,389,328 | 2,389,328 | \$0.379 | \$0.379 | \$0 | \$0 |
| 2017 | 2,431,900 | 2,431,900 | \$0.379 | \$0.379 | \$0 | \$0 |
| 2018 | 2,474,473 | 2,474,473 | \$0.379 | \$0.379 | \$0 | \$0 |
| 2019 | 2,517,045 | 2,517,045 | \$0.379 | \$0.379 | \$0 | \$0 |
| 2020 | 2,518,861 | 2,559,618 | \$0.379 | \$0.379 | \$15,434 | \$5,633,530 |
| 2021 | 2,564,686 | 2,602,190 | \$0.379 | \$0.379 | \$14,202 | \$5,183,908 |
| 2022 | 2,610,511 | 2,644,762 | \$0.379 | \$0.379 | \$12,971 | \$4,734,286 |
| 2023 | 2,656,337 | 2,687,335 | \$0.379 | \$0.379 | \$11,739 | \$4,284,663 |
| 2024 | 2,702,162 | 2,729,907 | \$0.379 | \$0.379 | \$10,507 | \$3,835,041 |
| 2025 | 2,747,987 | 2,772,479 | \$0.379 | \$0.379 | \$9,275 | \$3,385,419 |
| 2026 | 2,793,812 | 2,815,052 | \$0.379 | \$0.379 | \$8,043 | \$2,935,797 |
| 2027 | 2,839,637 | 2,857,624 | \$0.379 | \$0.379 | \$6,811 | \$2,486,175 |
| 2028 | 2,885,463 | 2,900,196 | \$0.379 | \$0.379 | \$5,580 | \$2,036,552 |
| 2029 | 2,931,288 | 2,942,769 | \$0.379 | \$0.379 | \$4,348 | \$1,586,930 |
| 2030 | 2,977,113 | 2,985,341 | \$0.379 | \$0.379 | \$3,116 | \$1,137,308 |
| 2031 | 3,022,938 | 3,027,913 | \$0.379 | \$0.379 | \$1,884 | \$687,686 |
| 2032 | 3,068,763 | 3,070,486 | \$0.379 | \$0.379 | \$652 | \$238,063 |
| 2033 | 3,114,589 | 3,113,058 | \$0.379 | \$0.379 | -\$580 | -\$211,559 |
| 2034 | 3,160,414 | 3,155,630 | \$0.379 | \$0.379 | -\$1,811 | -\$661,181 |
| 2035 | 3,206,239 | 3,198,203 | \$0.379 | \$0.379 | -\$3,043 | -\$1,110,803 |
| 2036 | 3,252,064 | 3,240,775 | \$0.379 | \$0.379 | -\$4,275 | -\$1,560,426 |
| 2037 | 3,297,889 | 3,283,347 | \$0.379 | \$0.379 | -\$5,507 | -\$2,010,048 |
| 2038 | 3,343,715 | 3,325,920 | \$0.379 | \$0.379 | -\$6,739 | -\$2,459,670 |
| 2039 | 3,389,540 | 3,368,492 | \$0.379 | \$0.379 | -\$7,971 | -\$2,909,292 |

Project Readiness

| Task | Completion Date |
|--------------------|-----------------|
| Design Surveys | Complete |
| Roadway Design | Early 2016 |
| Environmental | Early 2016 |
| Right of Way | Mid-2016 |
| Utilities | Late 2016 |
| Project Obligation | Late 2016 |

Project Schedule

| Task | Completion Date |
|--------------------------------|-----------------|
| Award to Contract | Late 2016 |
| Mobilization of Project | Late 2016 |
| Project Substantially Complete | Mid-2019 |
| Open to Traffic | Mid-2019 |